

REMARKS/ARGUMENTS

Claims 39-42 and 45-75 are pending in this application, with claims 39 and 67 being the only independent claims. Claims 39, 45-46, 48-49, 54, and 67 are amended. Claims 43-44 and 76 are canceled by the present amendment without prejudice or disclaimer. Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

Claim 39 stands rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,678,541 (Durkin).

Claims 39-43 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,640,957 (Kaminski).

Claims 44-46, 48, and 65 stand rejected under 35 U.S.C. §103 as being unpatentable over Kaminski.

Claim 47 stands rejected under 35 U.S.C. §103 as unpatentable over Kaminski in view of U.S. Patent No. 6,529,543 (Anderson).

Claims 52-54 stand rejected under 35 U.S.C. §103 as unpatentable over Kaminski in view of U.S. Patent No. 6,348,694 (Gershteyn).

Claims 55-59 and 64 stand rejected under 35 U.S.C. §103 as unpatentable over Kaminski and Gershteyn in view of U.S. Patent No. 5,807,261 (Benaron).

Claim 60 stands rejected under 35 U.S.C. §103 as unpatentable over Kaminski and Gershteyn in view of U.S. Patent No. 6,736,832 (Lenderink).

Claim 61 stands rejected under 35 U.S.C. §103 as unpatentable over Kaminski and Gershteyn in view of U.S. Patent Application Publication No. 2002/0052562 (Lipman).

Claims 62-63 stand rejected under 35 U.S.C. §103 as unpatentable over Kaminski in view of U.S. Patent No. 5,107,123 (Shi).

Claim 66 stands rejected under 35 U.S.C. §103 as unpatentable over Kaminski in view of U.S. Patent No. 4,882,598 (Wulf).

Claims 67-68, 70-74 and 76 stand rejected under 35 U.S.C. §103 as unpatentable over Kaminski in view of the article by Vandeberg.

Claim 69 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kaminski and Vandeberg in view of US Patent No. 4,843,279 (Rattray).

Claims 75 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kaminski and Vandeberg in view of US Patent Publication No. 2002/0183811 (Irwin).

Before discussing the cited prior art and the Examiner's rejections of the claims in view of that art, a brief description of the subject matter described in the present application is deemed appropriate to facilitate understanding of the arguments for patentability. The description is not meant to argue unclaimed subject matter.

The present invention relates to measuring devices and a method for determining the allowable UV exposure time and/or UV radiation dose of human skin. According to the invention, allowable exposure time and/or radiation dose is based on UV radiation for which the reflection that occurs in and/or on the skin is not true reflection but rather diffuse reflection (see paragraphs [0065] - [0066] in the specification as filed). As shown in Fig. 2 of the present application, an incident ray 1 penetrates the skin 2 and is radially scattered and is partly diffusely reflected (as indicated by the rays of light 3) and partly absorbed (as indicated by the rays 4) (see paragraph [0066]). The density and/or thickness of the melanin granules and/or density and/or thickness of the layer of melanosomes embedded in keratinocytes can be derived from the rays 3 that represent the diffuse

reflection to obtain information about the effectiveness of an area of hyperkeratosis, on the basis of which a threshold dose can be determined (see paragraph [0067]). According to an embodiment of the invention, a measuring device 6 includes a UV emitter 7 and a UV sensor 8 arranged in a common housing 9, and a reflection of a ray on an optical axis 12 of the UV emitter 7 and an optical axis 13 of the UV sensor 8 occurs at a defined depth of penetration of up to 1 mm (see paragraphs [0031]-[0032] and [0072]).

Independent claim 39 is amended to include the limitations of claim 44 and recites “a housing of a hand-held instrument, wherein the UV emitter and the UV sensor are disposed in a housing, and wherein the housing has an application surface for placement on the skin, each of the UV emitter and the UV sensor has an optical axis, and the UV emitter and the UV sensor are disposed at an angle relative to each other so that a reflection of a ray on the optical axes of the UV emitter and the UV sensor occurs at a defined depth of penetration below the application surface sufficient to measure diffuse reflection in a layer of skin.”

Since claim 39 now incorporates the limitations of claim 44, the rejection of claim 39 as anticipated by Durkin is moot.

Kaminski fails to teach or suggest the above limitations of claim 39. Kaminski discloses an ultraviolet radiation protection evaluator with a fiber optic probe 18 connected to source and detector monochromator by fiber optic bundles 20 and 22 (see Figs. 1 and 2 of Kaminski). According to Kaminski, diffused light emitted from bundle 20 is returned to the probe 18 and bundle 22 and used to determine the effectiveness of sunscreen (see col. 4, lines 13-15 of Kaminski). To accomplish the determination, Kaminski discloses that measurements from both sunscreen treated and untreated skin are compared (see col. 4, lines 55-65). In another

embodiment shown in Figs. 6-7, Kaminski teaches that separate probes for the transmitting and receiving bundles 20, 22 are used to allow probes to be angled to avoid noise (col. 5, lines 38-53).

Kaminski fails to disclose that the UV emitter and UV sensor are disposed in a housing with an application surface, as recited in independent claim 39. In contrast, Kaminski discloses that the emitter and sensor are arranged in a housing that is separate from a probe. In the rejection of previous claim 44, the Examiner refers to Figs. 1-3 and 10-11. However, only Fig. 11 discloses probes that direct the end of an optical fiber. As stated above, the probes of Kaminski do not include the emitter and sensor. Thus, Kaminski fails to teach or suggest that the optical axes of the emitter and sensor themselves are arranged to meet at a predefined depth. Furthermore, Kaminski discloses that the probes in Fig. 11 are two separate probes and are not arranged at a specific angle to each other in a housing.

Furthermore, there is no reason to modify Kaminski to achieve the claimed structure because Kaminski discloses an entirely different purpose, namely, separately measuring treated and untreated skin to determine effectiveness of sunscreen. Kaminski fails to teach or suggest a measurement for determining allowable exposure time or allowable radiation dose.

For all of the above reasons, independent claim 39 is allowable over Kaminski.

Independent claim 67 is amended to recite that the step of determining is performed by a device having the limitations recited in independent claim 39. Accordingly, independent claim 67 is allowable over Kaminski. Vandeberg fails to disclose what Kaminski lacks. Vandeberg is cited by the Examiner for its disclosure that absorption of UV radiation is determined in a layer of skin that has developed hyperkeratosis. Accordingly, the combination of Kaminski and Vandeberg fails to disclose “wherein the step of determining is carried out by using a device comprising a UV emitter for emitting UV radiation on the skin, a UV sensor for receiving UV radiation diffusely

reflected by the skin, an evaluation unit coupled to the UV emitter and the UV sensor for determining UV radiation absorption of the skin based on the UV radiation emitted on the skin by the UV emitter and the UV radiation received by the UV sensor, and a housing of a hand-held instrument, wherein the UV emitter and the UV sensor are disposed in a housing, and wherein the housing has an application surface for placement on the skin, each of the UV emitter and the UV sensor has an optical axis, and the UV emitter and the UV sensor are disposed at an angle relative to each other so that a reflection of a ray on the optical axes of the UV emitter and the UV sensor occurs at a defined depth of penetration below the application surface sufficient to measure diffuse reflection in a layer of skin", as now expressly recited in independent claim 67.

Dependent claims 40-42, 45-66 and 68-75 are allowable for the same reasons as are independent claims 39 and 67, as well as for the additional recitations contained therein.

Dependent claim 54 is amended to further recite limitations described in paragraph [0079] of the specification as originally filed.

The application is now deemed to be in condition for allowable and notice is solicited.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
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